AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows. This listing of claims will replace all prior listings.

1-11 (CANCELLED)

12. (CURRENTLY AMENDED) A vibration isolation system for reducing vibrations in a rotating system which rotates about an axis of rotation, comprising:

~~a housing~~ an enclosed chamber ~~defining an internal chamber, said housing~~ mounted to ~~said~~ the rotating system for rotation about said axis of rotation independent of the rotating system;

a Magneto Rheological Fluid (MRF) at least partially filling said ~~internal~~ enclosed chamber; and

an electromagnetic field generation system mounted adjacent said ~~internal~~ enclosed chamber to azimuthally vary a viscosity of said MRF and distribute said MRF within said ~~internal~~ enclosed chamber to reduce a vibratory load in said rotating system.

13. (CURRENTLY AMENDED) The vibration isolation system as recited in claim 12, wherein said ~~internal~~ enclosed chamber is driven about said axis of rotation at a rotational speed greater than the rotating system.

14. (CURRENTLY AMENDED) The vibration isolation system as recited in claim 12, wherein said ~~internal~~ enclosed chamber is driven at an absolute rotational speed of NP in the rotational direction of the rotating system where N is a number of rotor blades mounted to the rotating systems and P is the rotational speed of the rotating system.

15. (CURRENTLY AMENDED) The vibration isolation system as recited in claim 12, wherein said ~~internal~~ enclosed chamber is driven at an absolute rotational speed of NP in a

rotational direction opposite of the rotating system where N is a number of rotor blades mounted to the rotating system and P is the rotational speed of the rotating system.

16. (PREVIOUSLY PRESENTED) The vibration isolation system as recited in claim 12, wherein said rotating system includes a main rotor system.

17. (CURRENTLY AMENDED) The vibration isolation system as recited in claim 12, further comprising a drive system which includes an electric motor to drive said ~~internal~~ enclosed chamber about said axis of rotation at a rotational speed greater than the rotating system.

18. (PREVIOUSLY PRESENTED) The vibration isolation system as recited in claim 17, further comprising a generator which drives said electric motor, a phase of the voltage from said generator providing a phase reference to said control system indicative of a rotational speed of the rotating system.

19. (CANCELED)

20. (CURRENTLY AMENDED) The vibration isolation system as recited in claim 12, wherein said electromagnetic field generation system includes a multiple of electromagnets ~~within said housing for rotation therewith and~~ adjacent said ~~internal~~ enclosed chamber for rotation therewith.

21. (CURRENTLY AMENDED) A helicopter rotor system which rotates about an axis of rotation, comprising:

a main rotor ~~assembly~~ system having an N number of blades which rotates about an axis of rotation at a rotational speed of 1P, such that said main rotor system produces NP vibrations;

~~a housing defining an internal chamber, said housing~~ an enclosed chamber mounted to said main rotor ~~assembly~~ system for rotation about said axis of rotation independent of said main rotor ~~assembly~~ system;

a Magneto Rheological Fluid (MRF) at least partially filling said ~~internal~~ enclosed chamber;

a sensor system which senses the NP vibrations;

a control system in communication with said sensor system, said control system operable to identify variations of the NP vibrations; and

an electromagnetic field generation system mounted ~~within said housing for rotation therewith and~~ adjacent said ~~internal~~ enclosed chamber to azimuthally vary a viscosity of said MRF and distribute said MRF within said ~~internal~~ enclosed chamber to ~~selectively~~ form an eccentric mass in response to said control system to reduce said NP vibrations.

22. (CURRENTLY AMENDED) The helicopter rotor system as recited in claim 21, further comprising a drive system which includes an electric motor to drive said ~~internal~~ enclosed chamber about said axis of rotation at an absolute rotational speed of NP in the direction of the main rotor assembly.

23. (CURRENTLY AMENDED) The helicopter rotor system as recited in claim 21, further comprising a drive system which includes an electric motor to drive said ~~internal~~ enclosed chamber about said axis of rotation at an absolute rotational speed of (N+1)P in a direction opposite of the main rotor assembly.

24. (CURRENTLY AMENDED) A method of reducing vibrations in a helicopter rotor system which rotates about an axis of rotation comprising the steps of:

(1) rotating ~~a housing~~ an enclosed chamber mounted to a main rotor ~~assembly~~ system about the axis of rotation independent of the main rotor ~~assembly~~ system, the

~~housing having an internal chamber~~ enclosed chamber at least partially filled with a Magneto Rheological Fluid (MRF);

(2) sensing a vibration generated by the main rotor ~~assembly~~ system;

(3) varying an electromagnetic field about the ~~internal~~ enclosed chamber to azimuthally vary a viscosity of said MRF and distribute said MRF within said ~~internal~~ enclosed chamber to form an eccentric mass in response to said step (2) to reduce the vibration; and

(4) varying an electric motor speed that rotates the ~~housing~~ enclosed chamber to match an optimal load reducing phase relative the vibration in response to controller commands.

25. (PREVIOUSLY PRESENTED) A method as recited in claim 24, wherein said step (3) further comprises:

varying the electromagnetic field in response to a predefined schedule.

26. (CURRENTLY AMENDED) A method as recited in claim 24, wherein said step (3) further comprises:

(a) sensing a trend in a variation of the vibrations generated by the main rotor ~~assembly~~ system; and

(b) varying the electromagnetic field in response to the trend.

27. (CURRENTLY AMENDED) A method as recited in claim 24, wherein said step (3) further comprises:

(a) forming the eccentric mass within the enclosed chamber in an azimuthal position about the axis of rotation in response to a commanded strength of the electromagnetic field position.

28. (CURRENTLY AMENDED) A method as recited in claim ~~27~~ 24, wherein said step (4) further ~~comprising~~ comprises the ~~step~~ steps of:

(a) mechanically driving a generator in response to a speed of the main rotor ~~assembly~~ system, the rotational speed of the generator being a fixed multiple of the speed of the main rotor ~~assembly~~ system NP frequency;

(b) driving ~~an~~ the electric motor with the generator ~~which drives~~ to rotate the ~~internal~~ enclosed chamber~~-with the generator~~; ~~and~~

(c) determining a phase reference signal from a voltage of the generator to indicate a rotational speed of the main rotor ~~assembly~~[[.]] system; and

(d) determining the optimal phase of the electric motor from the ~~phase of said~~ phase reference signal.

29. (NEW) The helicopter rotor system as recited in claim 21, further comprising a housing mounted to said main rotor ~~assembly~~ system, said enclosed chamber mounted for rotation within said housing.

30. (NEW) The helicopter rotor system as recited in claim 29, further comprising a drive system located within said housing to drive said enclosed chamber about said axis of rotation.

31. (NEW) The helicopter rotor system as recited in claim 29, wherein said electromagnetic field generation system is mounted within said housing adjacent said enclosed chamber.

32. (NEW) The helicopter rotor system as recited in claim 29, wherein said housing is mounted to said main rotor system for rotation therewith.

33. (NEW) A helicopter rotor system which rotates about an axis of rotation, comprising:

a main rotor system having an N number of blades which rotates about an axis of rotation at a rotational speed of 1P, such that said main rotor system produces NP vibrations;

a housing mounted to said main rotor assembly;

an enclosed chamber mounted within said housing for rotation about said axis of rotation independent of said main rotor assembly;

an electric motor located within said housing to drive said enclosed chamber about said axis of rotation independent of said main rotor assembly;

a Magneto Rheological Fluid (MRF) at least partially filling said enclosed chamber;

a sensor system which senses the NP vibrations;

an electromagnetic field generation system mounted adjacent said enclosed chamber to azimuthally vary a viscosity of said MRF and distribute said MRF within said enclosed chamber to form an eccentric mass; and

a control system in communication with said sensor system, said electric motor, and said electromagnetic field generation system, said control system operable to identify variations of the NP vibrations to control a rotational speed of said enclosed chamber and said electromagnetic field generation system to control distribution of said MRF within said enclosed chamber to reduce the NP vibrations.

34. (NEW) The system as recited in claim 33, further comprising a generator driven by said main rotor system which powers said electric motor, a phase of the voltage from said generator providing a phase reference to said control system indicative of a rotational speed of the said main rotor system.